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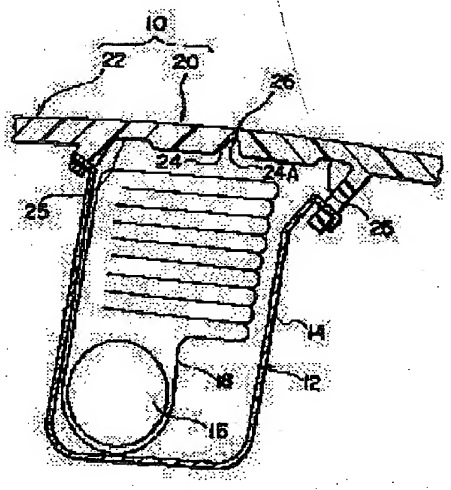
(54) VEHICLE INTERIOR MEMBER HAVING AIR BAG DOOR PART AND FORMING METHOD FOR INTERIOR MEMBER

(57)Abstract:
PROBLEM TO BE SOLVED: To allow sinking to the desired value the rupturing force of the ruptural part of an air bag door part even in case the interior member of vehicle is formed from the same resin material in the air bag door part and the body part.
SOLUTION: Thin wall thickness parts 24 having an H-form plan view are formed in the center fore and aft and at the left end and right end of an air bag door part 20 of an instrument panel 10. The part 24 has a V-form section, and its forefront 24 works as a ruptural part when the air bag door part is spread, and the resin fluidify boundary 26 between the resin constituting the front door part and the resin constituting the rear door part of the air bag door part 20 is set at the forefront 24A.



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* NOTICES *

CLAIMS

[Claim(s)]
[Claim 1] In the interior member for vehicles in which this soma and the air bag door section of a member have the air bag door section fabricated by injection molding by the same resin the interior for vehicles used as one or another object — the interior for vehicles which has the air bag door section characterized by setting the resin flow boundary as the core back field for forming the fracture section at the time of air bag door section expansion, and the line of the fracture section being unable to be seen from a design side side — a member
[Claim 2] the interior for vehicles — the interior for vehicles which has the air bag door section characterized by a resin flow boundary being set as the core back field for forming the fracture section at the time of air bag door section expansion in the interior member for vehicles which has the air bag door section unified by 2 color fabrication using the resin with which this soma and the air bag door section of a member differ from each other, and the line of the fracture section being not seen from a design side side — a member
[Claim 3] This soma and the air bag door section of a base material of a member are fabricated with injection molding using the same resin. the interior for vehicles used as one or another object — In the interior member for vehicles which has the air bag door section by which this base material was covered with the Tea section and Tea-section-less epidermis the interior for vehicles which has the air bag door section characterized by setting the resin flow boundary as the core back field for forming the fracture section at the time of air bag door section expansion, and the line of the fracture section being unable to be seen from a design side side — a member

[Claim 4] This soma and the air bag door section of a base material of a member are fabricated with injection molding using the same resin. the interior for vehicles used as one or another object — In the interior member for vehicles which has the air bag door section by which this base material was covered with epidermis with the Tea section, and the foaming layer was formed between this epidermis and the aforementioned base material the interior for vehicles which has the air bag door section characterized by setting the resin flow boundary as the core back field for forming the fracture section at the time of air bag door section expansion, and the line of the fracture section being unable to be seen from a design side side — a member
[Claim 5] In the forming method of a member the interior for vehicles which has the air bag door section of a publication in either of the claim 1 **** claims 4 — A cavity is divided in the fracture section by making the slide core by which the nose of cam was made the shape of an abbreviation triangle contact or approach a cover half. the interior for vehicles which has the air bag door section which a resin is injected to each cavity divided in this state, is before and after the completion of restoration, and is characterized by carrying out small-amount retreat of the aforementioned slide core — the forming method of a member
[Claim 6] the interior for vehicles which has the air bag door section according to claim 5 characterized by controlling the breaking strength of the fracture section by combining the thickness of the dwelling [before and behind the aforementioned completion of restoration], core back timing, and fracture section circumference — the forming method of a member
[Claim 7] the interior for vehicles which has the air bag door section according to claim 6

characterized by setting up the aforementioned core back timing after the aforementioned completion of restoration — the forming method of a member
[Claim 8] the interior for vehicles which has the air bag door section according to claim 7 characterized by setting up the aforementioned core back timing after the 2nd step dwelling while dividing and lowering the dwelling after the aforementioned completion of restoration to several step story — the forming method of a member

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[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] the interior for vehicles which has the air bag door section in which this invention prepared the door section of air bag equipment in interior members for vehicles, such as an instrument panel, — it is related with a member and its forming method
[0002]
[Description of the Prior Art] Interior members for vehicles, such as an instrument panel which has the air bag door section, are known from the former, and the example is shown in JP,8-192666,A.
[0003] After injection molding this soma of the instrument panel which has opening for air bag doors by thermoplastics, this soma and the air bag door section of an instrument panel are really fabricated by the forming method of the instrument panel which has this air bag door section by the so-called 2 color fabrication (double injection fabrication) which carries out injection molding of the air bag door section by thermoplastic elastomer.
[0004]
[Problem(s) to be Solved by the Invention] however — without it changes the resin of the air bag door section with the resin of this soma in the interior member for vehicles which has such the air bag door section — the interior for vehicles — a member — when the whole is constituted from same resin, the fracture force of the fracture section at the time of the expansion formed in the air bag door section (Tea section) becomes high on the property of the resin of this soma, and it is hard coming to develop the air bag door section (the same thickness) Moreover, since a thin-walled part can be further seen from a design side side when resin thickness of the fracture section is made thin too much, in order to improve this, appearance quality deteriorates.
[0005] Moreover, in order for the line of the fracture section to change into the state (invisible type) where it is not visible at all, from a design side side, there is the method of making heavy-gage and omitting by post processing at the time of fabrication. However, it is very difficult to make it not seen [the line of the fracture section], after maintaining the predetermined fracture force by this method. That is, if resin thickness is made small, though a relief slot will be given, the line and the feeling of external waviness of the fracture section can be seen from a design side side, practical appearance quality cannot be held, and resin thickness cannot be made small enough.
[0006] In addition, in order for the fracture force of the fracture section at the time of the expansion formed in the air bag door section (Tea section) to become high, to be hard coming to develop the air bag door section and to improve this Since a thin-walled part can be seen from a design side side when resin thickness of the fracture section is made thin too much, the fault that appearance quality deteriorates the air bag door section and the interior for vehicles — the interior member for vehicles which really fabricated this soma of a member by 2 color fabrication using a different resin, and the air bag door section and the interior for vehicles — the interior for vehicles made into one on the stop presser foot stitch tongue, the screw, etc. after

fabricating this soma of a member separately — it generates also in the fracture section of a member

[0007] this invention — the above-mentioned fact — taking into consideration — the interior for vehicles — the interior for vehicles which has the air bag door section which can lower the fracture force of the fracture section of the air bag door section to a desired value, without appearance quality deteriorating when the air bag door section and this soma of a member are fabricated by the same resin — it is the purpose to acquire a member and its forming method

[0008]

[Means for Solving the Problem] the interior for vehicles with which this invention according to claim 1 be used as one or another object — the resin flow boundary be set as the core back field for form the fracture section at the time of air bag door section expansion in the interior member for vehicles in which this soma and the air bag door section of a member have the air bag door section fabricated by injection molding by the same resin , and it be characterize by the line of the fracture section not be not seen from a design side side

[0009] Therefore, the fracture force of the fracture section can be lowered to a desired value by the on-the-strength fall by the resin flow boundary by setting a resin flow boundary as the core back field for forming the fracture section at the time of air bag door section expansion. Moreover, since it becomes unnecessary to make resin thickness of the fracture section extremely thin, while the line of the fracture section changes into the state where it is not visible at all, from a design side side and being able to prevent deterioration of appearance quality, a heat-resistant aging performance improves and support and field rigidity of the whole air bag door section also improve. furthermore — the case where the air bag door section and this soma are really fabricated by the same resin — the interior for vehicles — divide paint of a member into two sorts of quality of the materials, and it becomes unnecessary to perform it, and becomes a low cost

[0010] this invention according to claim 2 — the interior for vehicles — the resin flow boundary be set as the core back field for form the fracture section at the time of air bag door section expansion , and it be characterize by the ability of the line of the fracture section to be unable to be seen from a design side side in the interior member for vehicles which have the air bag door section unified by 2 color fabrication using the resin with which this soma and the air bag door section of a member differ from each other

[0011] Therefore, also in the interior member for vehicles which has the air bag door section unified by 2 color fabrication, the fracture force of the fracture section can be lowered to a desired value by the on-the-strength fall by the resin flow boundary by setting a resin flow boundary as the core back field for forming the fracture section at the time of air bag door section expansion. Moreover, since it becomes unnecessary to make resin thickness of the fracture section extremely thin, while the line of the fracture section changes into the state where it is not visible at all, from a design side side and being able to prevent deterioration of appearance quality, a heat-resistant aging performance improves and support and field rigidity of the whole air bag door section also improve.

[0012] This soma and the air bag door section of a base material of a member are fabricated with injection molding using the same resin. the interior for vehicles with which this invention according to claim 3 was used as one or another object — In the interior member for vehicles which has the air bag door section by which this base material was covered with the Tea section and Tea-section-less epidermis The resin flow boundary is set as the core back field for forming the fracture section at the time of air bag door section expansion, and it is characterized by the ability of the line of the fracture section not to be seen from a design side side.

[0013] Therefore, the fracture force of the fracture section can be lowered to a desired value by the on-the-strength fall by the resin flow boundary by setting a resin flow boundary as the core back field for a base material forming the fracture section at the time of air bag door section expansion also in the interior member for vehicles which has the air bag door section the so-called epidermis insertion and epidermis **** lump type covered with the Tea section and Tea-section-less epidermis. Moreover, since it becomes unnecessary to make resin thickness of the fracture section extremely thin, while being able to prevent deterioration of the appearance

quality imprinted by epidermis, a heat-resistant aging performance improves and support and field rigidity of the whole air bag door section also improve.
[0014] This soma and the air bag door section of a base material of a member are fabricated with injection molding using the same resin. the interior for vehicles with which this invention according to claim 4 was used as one or another object — In the interior member for vehicles which has the air bag door section by which this base material was covered with epidermis with the Tea section, and the foaming layer was formed between this epidermis and the aforementioned base material The resin flow boundary is set as the core back field for forming the fracture section at the time of air bag door section expansion, and it is characterized by the ability of the line of the fracture section not to be seen from a design side side.
[0015] Therefore, it also sets to the interior member for vehicles by which the base material was covered with epidermis with the Tea section, and the foaming layer was formed between epidermis and the base material and which really [so-called] has the foaming type air bag door section. By setting a resin flow boundary as the core back field for forming the fracture section at the time of air bag door section expansion, the fracture force of the fracture section can be lowered to a desired value by the on-the-strength fall by the resin flow boundary. Moreover, since it becomes unnecessary to make resin thickness of the fracture section extremely thin, while being able to prevent the under fill at the time of fabrication, a heat-resistant aging performance improves and support and field rigidity of the whole air bag door section also improve.
[0016] In the forming method of a member the interior for vehicles with which this invention according to claim 5 has the air bag door section of a publication in either of the claim 1 **** claims 4 — By making the slide core by which the nose of cam was made the shape of an abbreviation triangle contact or approach a cover half, a resin is injected to each cavity which divided the cavity in the fracture section and was divided in this state, and it is before and after the completion of restoration, and is characterized by carrying out small-amount retreat of the aforementioned slide core.
[0017] Therefore, a resin flow boundary can be set as the fracture section at the time of air bag door section expansion by the easy method [say / carrying out small-amount retreat of the slide core a condition before and after dividing the cavity of the air bag door section, injecting a resin to each cavity in this state and a resin's carrying out the completion of restoration by the slide core by which the nose of cam was made the shape of an abbreviation triangle].
Consequently, since the existing forming facility can be used, it can fabricate to a low cost. Moreover, because of an easy method, also in reservation of functional quality, it is reliable, and productivity is also high.
[0018] the interior for vehicles with which this invention according to claim 6 has the air bag door section according to claim 5 — it is the forming method of a member and is characterized by controlling the breaking strength of the fracture section by combining the thickness of the dwelling [before and behind the aforementioned completion of restoration], core back timing, and fracture section circumference
[0019] Therefore, in addition to contents according to claim 5, the breaking strength of the fracture section is controllable to a desired value with an easily and sufficient precision by combining the thickness of the dwelling [before and behind the completion of restoration], core back timing, and fracture section circumference.
[0020] the interior for vehicles with which this invention according to claim 7 has the air bag door section according to claim 6 — it is the forming method of a member and is characterized by setting up the aforementioned core back timing after the aforementioned completion of restoration
[0021] Therefore, if core back timing is too earlier than the completion of restoration, although the resin with which it was filled up previously will flow in the space by the side of restoration un-completing and a resin flow boundary will shift from the fracture schedule section by the slide core, on the other hand since core back timing was set up after the completion of restoration in this invention in addition to the content according to claim 6, the position gap with a resin flow boundary and the fracture schedule section can be prevented.

[0022] the interior for vehicles with which this invention according to claim 8 has the air bag door section according to claim 7 — it is the forming method of a member, and while dividing and lowering the dwelling after the aforementioned completion of restoration to several step story, it is characterized by setting up the aforementioned core back timing after the 2nd step dwelling
[0023] Therefore, by setting up core back timing after the 2nd step dwelling in addition to a content according to claim 7, since the 1st step of dwelling is performed certainly, the weight, size, and configuration of mold goods can be stabilized, and fault generating of a product can be reduced.
[0024]
[Embodiments of the Invention] the interior for vehicles which has the air bag door section of this invention in one — 1 operation gestalt of a member is explained according to drawing 1 – drawing 5
[0025] As shown in drawing 2 , air bag equipment 12 (a part is illustrated to drawing 1) is arranged in the inner direction of a passenger side (space left-hand side of drawing 2) by the instrument panel 10 as an interior member for vehicles prepared in the vehicle interior of a room of vehicles.
[0026] As shown in drawing 1 , the air bag case 14 of air bag equipment 12 is being fixed to the instrument-panel reinforcement which omitted illustration, and the air bag bag body 18 is contained in the inflator 16 and the state where it folded up, in the air bag case 14.
[0027] Moreover, the part which carries out abbreviation opposite with the air bag case 14 of an instrument panel 10 serves as the air bag door section 20, and parts other than air bag door section 20 of an instrument panel 10 serve as this soma 22. These air bag door sections 20 and these somata 22 It is what Broglie-ized the TSOP[elastomer (rubber) and PP (polypropylene) as rigid resin (technology which builds the macromolecule multicomponent system material which can expect the synergistic effect), added talc further, and carried out compound strengthening. The low-specific-gravity PP resin with which it has shock resistance and rigidity and with which the fluidity was well suitable for the light-gage product, For example, it consists of the bending elastic modulus 1500 – 3000MPa], PP system resin, a PC/ABS system resin, a denaturation PPO system resin, a PC/PBT system resin, a ABS system resin, PC system resin, an ASG system resin, the TPO system resin, a TPE system resin, a TPU system resin, PC / denaturation PS system resin, etc.
[0028] If the mechanical or electric acceleration sensor which is not illustrated detects a sudden slowdown of vehicles, the inflator 16 within the air bag case 14 operates, and air bag equipment 12 will turn to the air bag door section 20 of an instrument panel 10 the air bag bag body 18 which is folded up and held in the air bag case 14, and will be expanded. The air bag bag body 18 presses the air bag door section 20 of an instrument panel 10, makes the air bag door section 20 cleave, and is developed to the vehicle interior of a room. In addition, since well-known general composition is conventionally applicable as air bag equipment 12, with the gestalt of this operation, detailed explanation of air bag equipment 12 is omitted.
[0029] As shown in drawing 2 , the thin-walled part 24 (Tea section) is formed in the cross-direction abbreviation center section and longitudinal-direction both ends of the air bag door section 20 by plane view at H configuration, and it has composition in which the air bag door section 20 carries out double doors opening outward to order at the time of air bag bag body expansion and which an air bag bag body develops to the vehicle interior of a room.
[0030] As shown in drawing 1 , the cross section of a thin-walled part 24 has become V character-like. Specifically, V character height h shown in drawing 3 is set to the range which does not exceed the general thickness of the air bag door section, for example, the range of 0< h<=5mm. In addition, when the general thickness of the air bag door section is thick, you may enlarge h further. And while being the fracture section at the time of air bag door section expansion near the nose-of-cam (pars basilaris ossis occipitalis) 24A, the resin flow boundary 26 of the resin which constitutes front door section 20A of the air bag door section 20, and the resin which constitutes back door section 20B is set up near the nose-of-cam 24A.
[0031] Moreover, the hinge region 25 used as thin meat is formed in the cross-direction both ends of the air bag door section 20. Therefore, if the air bag door section 20 is pressed with the

expanding air bag bag body 18 at the time of air bag expansion, it cleaves along with a thin-walled part 24, and front door section 20A and back door section 20B which clove will rotate focusing on a hinge region 25, and opening which enables expansion of the air bag bag body 18 to the vehicle interior of a room will be formed.

[0032] Next, the forming method of the instrument panel of the operation gestalt of this invention is explained in detail.

[0033] First, as shown in drawing 3 , a resin is injected from the different predetermined gate A or predetermined Gate B (refer to drawing 2), front door section 20A of the air bag door section 20 is fabricated, and a resin is injected from Gate A or Gate B to the cavity 34 of the punch 30 as a mold which becomes the design side of an instrument panel, and this punch 30 and female mold 32, and back door section 20B is fabricated to it. Under the present circumstances, as shown in drawing 3 , nose-of-cam 40A of the slide core 40 made into the shape of a cross-section abbreviation triangle opens few initial crevices S (0< S<=2mm) between punches 30, is close to it, and has divided the cavity 34 substantially.

[0034] In addition, the slide core 40 is arranged in female mold 32 possible [movement in the direction (the direction of arrow A and the direction of arrow B of drawing 3) which attaches and detaches to a punch 30].

[0035] Moreover, as shown in drawing 5 as an example of a process condition, the injection start time T2 of Gate A is delayed time TS (start staggering time) to the injection start time T1 of Gate B. The time lag tangent line between the time T4 for the resin of the time T3 for the resin of front door section 20A by which a injection flow was carried out in Gate A to reach nose-of-cam 40A of a slide core 40, and fill up front door section 20A with this, and back door section 20B by which a injection flow was carried out in Gate B to reach nose-of-cam 40A of a slide core 40, and to be filled up with back door section 20B is adjusted so that it may become small. (The gap with the resin flow boundary 26 in the surface section and nose-of-cam 24A of a thin-walled part 24 becomes large. if time lag tangent line becomes large, this) it is for preventing becoming a little disadvantageous to the ease of carrying out of the cleavage at the time of air bag bag body expansion From T3 again on the predetermined point T7 within during [TM] the dwelling completion time T6 the time of the resin of front door section 20A reaching nose-of-cam 40A of a slide core 40 in an instant It is the specified quantity L (set to the range which does not exceed the general thickness of the air bag door section, for example, the range of 0< L<=5mm.) to the direction (the direction of arrow B of drawing 4) which estranges a slide core 40 from the position (position of the two-dot chain line of drawing 4) close to the punch 30. in addition, when the general thickness of the door section is thick, you may enlarge L further — it moves to the lowered position (position of the solid line of drawing 4) (core back)

[0036] The space 50 of the mobile integration of a slide core 40 is generated. before the dwelling completion time T6 for this reason, by the resin of front door section 20A It fills up with anterior space 50A of space 50, and posterior space 50B of space 50 is filled up with the resin of back door section 20B, nose-of-cam (pars basilaris ossis occipitalis) 24A of a thin-walled part 24 and the resin flow boundary 26 are in agreement by this part, and it will be in the state of drawing 4 . In addition, in drawing 4 , in order to make an understanding easy, different hatching showed anterior space 50A and posterior space 50B which are filled up with a resin. Moreover, the time T5 shown in drawing 5 shows dwelling start time, and after the dwelling completion time T6 shifts to cooling.

[0037] Here, a setup of dwelling and desirable core back timing is explained. Generally, after the completion of injection, dwelling is what the pressure is further applied to the resin injected at or less 1/2 grade of an injection pressure for, and has gone to the well which stabilizes the weight of mold goods, a size, and a configuration. With this operation gestalt, as shown to drawing 10 by the solid line, dwelling is divided and lowered to two stages of V1 and V2. For the value V1 of the 1st step of dwelling, flexibility is a low that it is hard to change only for the resin unification (welding) intensity of the Tea section of this operation gestalt since the quality of the whole product is influenced greatly. On the other hand, since the effect of the 1st step of dwelling has shown up and the value V2 of the 2nd step of dwelling does not influence the quality of the whole product greatly, flexibility's is [that it is easy to change] high. Therefore, after the 1st

step of dwelling time which a poor product cannot generate easily passed, as for the core back timing of a slide core 40, it is desirable to set up at the time of the 2nd step of dwelling.
[0038] As a factor which affects the welding intensity of a resin, there are a resin comrade's planar pressure and resin temperature in a welding interface by on the other hand being known generally (as for welding intensity, planar pressure and resin temperature fall [the method of a low]). Then, by this invention, the fracture force of the Tea section was controlled by controlling the planar pressure of the resin comrade of the Tea section welding interface by dwelling, and controlling the resin temperature of the Tea section welding interface by core back timing and the Tea section circumference board thickness to the desired value.
[0039] Next, this point is explained in detail. As shown in drawing 13 , after each welding interface temperature is raised in advance and is in a dissolution state, the 1st resin 80 and 2nd resin 82 were pressed by the predetermined force, and have joined each in the forcing direction (an arrow X1, X 2-way) mutually. Considering the welding intensity of the welding interface 84 of these 1st resin 80 and 2nd resin 82, generally two factors which affect this welding intensity on a welding principle are known, and it is with the planar pressure of the resin comrade of the welding interface 84, and resin temperature.
[0040] Then, the same idea is applicable in controlling the intensity of the Tea section welding of this operation form. That is, it transposes to the dwelling as an internal die pressure related to the planar pressure transmitted to a welding interface, and the core back timing related to resin temperature (from a melting state, the resin of the welding interface section is cooled by time and goes) and the Tea circumference thickness of a welding interface, and was made to control by the state of beginning to solidify, to the unification section (welding) of a flow resin after a flow.
[0041] For example, the planar pressure transmitted to a welding interface becomes high, so that dwelling is made high as shown in drawing 14 (A) when injection pressure 13.5Mpa, injection time 6sec, dwelling 6.5Mpa (the 1st step), 5.5Mpa (the 2nd step), dwelling-time 2+7sec, the same product weight, and the charge of the same test coupon from the gate are used, and the Tea section fracture force becomes large. Moreover, since time to be cooled and go becomes long and the resin temperature of a welding interface becomes low so that core back timing is made late as shown in drawing 14 (B), the Tea section fracture force becomes small. Furthermore, since resin temperature of a welding interface cannot become low easily so that V character height is made high (i.e., so that thickness of the Tea section circumference is thickened) as shown in drawing 14 (C), the Tea section fracture force becomes large.
[0042] Therefore, the breaking strength of the Tea section is controllable with an easily and sufficient precision to a desired value by combining each thick conditions of the such dwelling, core back timing, and Tea section circumference.
[0043] Moreover, if core back timing is too earlier than the completion of restoration, although the resin with which it fills up will flow in the space by the side of restoration un-completing and a resin flow boundary will shift from the fracture schedule section by the slide core, on the other hand when core back timing is set up after the completion of restoration, the position gap with a resin flow boundary and the fracture schedule section can be prevented.
[0044] In addition, as shown in drawing 5 , after the 1st step of dwelling time during the dwelling start time (T5) and dwelling completion time (T6) after the restoration by the side of Gates A and B passed, it is desirable to set up the core back timing T7 of a slide core 40, and it is most desirable to make into core back timing immediately after the 1st step of dwelling-time progress to which resin temperature does not become low too much.
[0045] moreover — as shown to drawing 10 by the dashed line, while dividing and lowering dwelling to a three-stage or the two or more floor beyond it — core back timing — the 2nd step dwelling or subsequent ones — also setting up — it is good In this case, by setting up core back timing after the 2nd step dwelling, since the 1st step of dwelling is performed certainly, the weight, size, and configuration of mold goods can be stabilized, and fault generating of a product can be reduced.
[0046] As shown to drawing 4 by the above process, while the cross-section [of V characters]-like thin-walled part 24 is formed of nose-of-cam 40A of a slide core 40, since it is

little, the resin flow boundary 26 is set as nose-of-cam 24A of a thin-walled part 24 for the movement magnitude L of a slide core 40 by it.

[0047] Therefore, in the instrument panel 10 of this operation gestalt, the fracture force of the fracture section can be lowered to a desired value by the on-the-strength fall and board thickness control by the resin flow boundary 26 by setting up the resin flow boundary 26 a field [the core back field of the slide core 40 for forming the thin-walled part 24 as the fracture section at the time of air bag door section expansion], i.e., nose-of-cam 24A of a thin-walled part 24 near. For this reason, since it becomes unnecessary to make extremely thin resin thickness (the amount L of initial crevice S+ slide-core strokes) of the fracture section, while being able to prevent deterioration of appearance quality, the line of the fracture section changes into the state where it is not visible at all, from a design side side, and support and field rigidity of improvement in a heat-resistant aging performance and the whole air bag door section also improve. Furthermore, since the air bag door section 20 and this soma 22 of an instrument panel 10 can be fabricated by the same resin, divide paint for every (two sorts) quality of the material, and it becomes unnecessary to perform it, and becomes a low cost.

[0048] moreover, by the forming method of the instrument panel of this operation form A nose of cam divides the cavity 34 of the air bag door section in the fracture section by the slide core 40 made into the shape of an abbreviation triangle. Say that small-amount L retreat of a slide core 40 is done a condition before and after it injects to each cavity which had the resin divided in this state and a resin carries out the completion of restoration. The resin flow boundary 26 can be set as the core back field of the slide core 40 for forming the thin-walled part 24 as the fracture section at the time of air bag door section expansion by the easy method. Consequently, since the existing forming facility can be used, it can fabricate to a low cost. Moreover, also in reservation of functional quality, it is reliable because of an easy method, and productivity is also high.

[0049] Although this invention was explained above in detail about the specific operation form, this invention is not limited to this operation form, and it is clear for this contractor its for other various operation forms to be possible within the limits of this invention. For example, although the initial crevice S (0< S<=2mm) was opened between nose-of-cam 40A of a slide core 40, and the punch 30, interference with nose-of-cam 40A of a slide core 40 and a punch 30 was lost and crimp blemish prevention and an endurance guarantee of the front face of a mold were taken into consideration with this operation form When time lag tangent line is large, you may enlarge the gap with the resin flow boundary 26 in the surface section, and nose-of-cam 24A of a thin-walled part 24, using the initial crevice S as 0.1<=S<=0.8mm. In this case, although it becomes a little disadvantageous to the ease of carrying out of the cleavage at the time of air bag bag body expansion, the appearance quality of the fracture section line from the design side side in nose-of-cam 24A can improve by the same thickness. Moreover, you may make nose-of-cam 40A of a slide core 40 contact a punch 30 as an initial crevice S= 0 depending on the case.

[0050] Moreover, with this operation form, although the injection start time T2 of Gate A was delayed time TS (start staggering time) to the injection start time T1 of Gate B, it replaces with this, and according to the physical relationship of Gate A and Gate B, it may be made to inject first from Gate A, only time TS may delay injection from Gate B, and restoration gap time (time lag) tangent line may be made small. Moreover, if the time T3 for the resin of front door section 20A injected from Gate A to reach nose-of-cam 40A of a slide core 40 and the time T4 for the resin of back door section 20B by which it was injected from Gate B to reach nose-of-cam 40A of a slide core 40 become the about the same by making simultaneous the injection start time T2 of Gate A, and injection start time T1 of Gate B, it is still good.

[0051] Moreover, although all [the thin-walled part 24 of H configuration] as it is the range which satisfies an expansion performance and mold structure allows as a range which forms a slide core 40 and is shown in drawing 6 (A), as shown in drawing 6 (B), it is good only as for a range which met the horizontal line of the thin-walled part 24 of H configuration in the range of a slide core 40. Moreover, as shown in drawing 6 (C), it is good only as for a range which met the vertical line of the thin-walled part 24 of H configuration in the range of a slide core 40. Moreover, as shown in drawing 6 (D) - drawing 6 (G), it is good also considering the range of a

slide core 40 only as a range of the pole of the thin-walled part 24 of H configuration part.
[0052] Moreover, the cross-section configuration of a thin-walled part 24 is good as for a configuration with the stage shown in R configuration shown in drawing 7 (A) other than a V character configuration, or drawing 7 (B).
[0053] Moreover, the timing of the core back of a slide core 40 is not only the somewhere instant of a before [from the time T3 of drawing 5 / time T6], but you may carry it out in the cooldown delay after the oak time T6 when a resin can flow. Moreover, speed which also spends an instant from time T3 to time T6 and which was carried out slowly is sufficient as the speed of the core back of a slide core 40. Moreover, since the resin of front door section 20A turns also from Gate B and it fills up with it only from Gate A, it is good also considering the gate as one.
[0054] Moreover, the instrument panel which has the air bag door section of this invention, and its forming method are not limited to the air bag door section of the double-doors-opening-outward type with which the thin-walled part 24 as shown in drawing 2 was formed in H configuration by plane view, but can be applied also to the instrument panel in which a thin-walled part 24 has the air bag door section of other configurations, such as the shape of a KO typeface, and X configuration, by plane view, and its forming method.
[0055] In addition, although all [the KO typeface-like thin-walled part 24] as it is the range which a thin-walled part 24 is satisfied [with plane view] of an expansion performance as a range which forms the slide core 40 in the case of-like [KO typeface], and mold structure allows and is shown in drawing 6 (H), as shown in drawing 6 (I), it is good only as for a range which met the horizontal line of the KO typeface-like thin-walled part 24 in the range of a slide core 40. Moreover, as shown in drawing 6 (J) and drawing 6 (K), it is good also considering the range of a slide core 40 only as a range of the pole of the KO typeface-like thin-walled part 24 part.
[0056] Moreover, the instrument panel which has the air bag door section of this invention, and its forming method are applicable also to the instrument panel 64 which has the air bag door section unified by 2 color fabrication by the slide core 63 using the resin with which this soma 60 and the air bag door section 62 of an instrument panel differ from each other, as shown in drawing 8 .
[0057] Moreover, the instrument panel which has the air bag door section of this invention, and its forming method are applicable also to the instrument panel 74 which has the air bag door section made into one on the engagement presser foot stitch tongue, the screw, etc., after injection molding this soma 70 and the air bag door section 72 of an instrument panel which were used as another object using a resin, as shown in drawing 9 (A) and drawing 9 (B).
[0058] moreover, the interior for vehicles which has the air bag door section of this invention — a member and its forming method As shown in drawing 11 , had the wrap epidermis 42 for design side 46A of a base material 46 and a base material 46. Are applicable also to the instrument panel 10 as an interior member for vehicles the so-called epidermis insertion and epidermis **** lump type. In this case, the Tea section 41 is formed in epidermis 42 along the slot 24, and it is set up so that epidermis 42 may fracture easily at the time of air bag bag body expansion. Or since local hauling produces the air bag door section simultaneously with expansion for the material of a rigid size even if there is no Tea section 41, it is easy to fracture epidermis 42. Moreover, in an epidermis insertion, the two-layer epidermis 42 shown in drawing 15 (B) in addition to epidermis 42 of the monolayer shown in drawing 15 (A) and the epidermis 42 of three layers shown in drawing 15 (C) may be used for the epidermis 42 shown here. In addition, in drawing 15 (A) - drawing 15 (C), a sign 47 is a form layer and a sign 48 shows a barrier layer.
[0059] Moreover, you may use the epidermis 42 with form layer 47 shown in drawing 16 (B) in addition to epidermis 42 of the monolayer which sticks and is shown in drawing 16 (A) in a lump type case.
[0060] moreover, the interior for vehicles which has the air bag door section of this invention — a member and its forming method are really [equipped with the foaming layer 43 between a base material 46, epidermis 42, and a base material 46 and epidermis 42 / so-called] applicable also to the instrument panel 10 as a foaming type interior member for vehicles, as shown in drawing 12

[0061] Moreover, the Tea section 41 formed in the epidermis 42 shown in drawing 11 and drawing 12 could be formed not only from what is formed from a front-face side but from the rear-face side. Moreover, the configuration of the Tea section 41 may not be limited in the shape of a cross-section U slot, but may be other configurations, such as the shape of the shape of a cross-section V groove, and a slit.

[0062]

[Effect of the Invention] In the interior member for vehicles in which this soma and the air bag door section of a member have the air bag door section fabricated by injection molding by the same resin the interior for vehicles with which this invention according to claim 1 was used as one or another object — Since the resin flow boundary is set as the core back field for forming the fracture section at the time of air bag door section expansion and the line of the fracture section cannot be seen from a design side side, the interior for vehicles — it has the outstanding effect that the fracture force of the fracture section of the air bag door section can be lowered to a desired value, without appearance quality deteriorating, when the air bag door section and this soma of a member are fabricated by the same resin furthermore — the case where the air bag door section and this soma are really fabricated by the same resin — the interior for vehicles — divide paint of a member into two sorts of quality of the materials, and it becomes unnecessary to perform it, and has the outstanding effect of becoming a low cost

[0063] In the interior member for vehicles which has the air bag door section unified by 2 color fabrication using the resin with which this soma and the air bag door section of a member differ from each other this invention according to claim 2 — the interior for vehicles — Since the resin flow boundary is set as the core back field for forming the fracture section at the time of air bag door section expansion and the line of the fracture section cannot be seen from a design side side, Also in the interior member for vehicles which has the air bag door section unified by 2 color fabrication, it has the outstanding effect that the fracture force of the fracture section of the air bag door section can be lowered to a desired value, without appearance quality deteriorating.

[0064] This soma and the air bag door section of a base material of a member are fabricated with injection molding using the same resin. the interior for vehicles with which this invention according to claim 3 was used as one or another object — In the interior member for vehicles which has the air bag door section by which the base material was covered with the Tea section and Tea-section-less epidermis Since the resin flow boundary is set as the core back field for forming the fracture section at the time of air bag door section expansion and the line of the fracture section cannot be seen from a design side side, In the interior member for vehicles which has the epidermis insertion and epidermis **** lump type air bag door section the interior for vehicles — it has the outstanding effect that the fracture force of the fracture section of the air bag door section can be lowered to a desired value, without appearance quality deteriorating, when the air bag door section and this soma of a base material of a member are fabricated by the same resin

[0065] This soma and the air bag door section of a base material of a member are fabricated with injection molding using the same resin. the interior for vehicles with which this invention according to claim 4 was used as one or another object — In the interior member for vehicles which has the air bag door section by which this base material was covered with epidermis with the Tea section, and the foaming layer was formed between this epidermis and the aforementioned base material Since the resin flow boundary is set as the core back field for forming the fracture section at the time of air bag door section expansion and the line of the fracture section cannot be seen from a design side side, In the interior member for vehicles which really has the foaming type air bag door section the interior for vehicles — it has the outstanding effect that the fracture force of the fracture section of the air bag door section can be lowered to a desired value, without appearance quality deteriorating, when the air bag door section and this soma of a base material of a member are fabricated by the same resin

[0066] In the forming method of a member the interior for vehicles with which this invention according to claim 5 has the air bag door section of a publication in either of the claim 1 **** claims 4 — In order to inject a resin to each cavity which divided the cavity in the fracture

section and was divided in this state by making the slide core by which the nose of cam was made the shape of an abbreviation triangle contact or approach a cover half, to be before and after the completion of restoration and to carry out small-amount retreat of the slide core, A resin flow boundary can be set as the fracture section at the time of air bag door section expansion by the easy method, and it is a low cost and has the outstanding effect that a functional guarantee and productivity are also high.

[0067] the interior for vehicles with which this invention according to claim 6 has the air bag door section according to claim 5 — since the breaking strength of the fracture section was controlled by being the forming method of a member and combining the thickness of the dwelling [before and behind the completion of restoration], core back timing, and fracture section circumference — an effect given in a claim 5 — in addition, it has the outstanding effect that the breaking strength of the fracture section is controllable with an easily and sufficient precision to a desired value

[0068] the interior for vehicles with which this invention according to claim 7 has the air bag door section according to claim 6 — since it is the forming method of a member and core back timing was set up after the completion of restoration — an effect according to claim 6 — in addition, it has the outstanding effect that the position gap with a resin flow boundary and the fracture schedule section can be prevented

[0069] the interior for vehicles with which this invention according to claim 8 has the air bag door section according to claim 7, while being the forming method of a member and dividing and lowering the dwelling after the aforementioned completion of restoration to several step story Since the aforementioned core back timing was set up after the 2nd step dwelling, in addition to an effect according to claim 7, the weight, size, and configuration of mold goods can be stabilized, and it has the outstanding effect that fault generating of a product can be reduced.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the expanded sectional view which met one to 1 line of drawing 2 .
[Drawing 2] It is the perspective diagram showing the interior member for vehicles which has the air bag door section concerning 1 operation gestalt of this invention in one.
[Drawing 3] the interior for vehicles which has the air bag door section concerning 1 operation gestalt of this invention in one — it is the outline cross section showing one process in the forming method of a member
[Drawing 4] the interior for vehicles which has the air bag door section concerning 1 operation gestalt of this invention in one — it is the outline cross section showing one process in the forming method of a member
[Drawing 5] the interior for vehicles which has the air bag door section concerning 1 operation gestalt of this invention in one — it is the timing chart which shows the forming method of a member
[Drawing 6] (A) — the interior for vehicles which has in one the air bag door section which – (G) requires for 1 operation gestalt of this invention — the interior for vehicles which has in one the air bag door section which is the outline plan showing the range of the slide core to the thin-walled part of H configuration of a member, and (H) – (K) requires for the application of this invention — it is the outline plan showing the range of the slide core to the thin-walled part of the shape of a KO typeface
[Drawing 7] the interior for vehicles which has in one the air bag door section which (A) and (B) require for the application of 1 operation gestalt of this invention — it is the outline cross section showing the cross-section configuration of the thin-walled part of a member
[Drawing 8] the interior for vehicles which has the air bag door section concerning the application of 1 operation gestalt of this invention in one — it is the outline cross section showing one process in the forming cycle of a member
[Drawing 9] the interior for vehicles which has in one the air bag door section which (A) requires for the application of 1 operation gestalt of this invention — the interior for vehicles which has in one the air bag door section which is the sectional side elevation showing the air bag door section of a member, and (B) requires for the application of 1 operation gestalt of this invention — it is the perspective diagram showing the air bag door section of a member
[Drawing 10] the interior for vehicles which has the air bag door section concerning 1 operation gestalt of this invention in one — it is the graph which shows change of the dwelling at the time of fabrication of a member
[Drawing 11] It is a cross section corresponding to drawing 1 which shows the interior member for vehicles which has the air bag door section concerning the application of 1 operation gestalt of this invention in one.
[Drawing 12] It is a cross section corresponding to drawing 1 which shows the interior member for vehicles which has the air bag door section concerning other applications of 1 operation gestalt of this invention in one.
[Drawing 13] It is a cross section explaining two factors which affect the welding intensity of the 1st resin and the 2nd resin.

[Drawing 14] (A) is a graph which shows the relation between dwelling and the Tea section fracture force, (B) is a graph which shows the relation between core back timing and the Tea section fracture force, and (C) is a graph which shows the relation between the thickness of the Tea section circumference, and the Tea section fracture force.
[Drawing 15] (A) — the interior for vehicles which has the air bag door section which – (C) requires for this invention — it is the cross section showing the epidermis of an epidermis insertion of a member
[Drawing 16] (A) and the interior for vehicles which has the air bag door section which (B) requires for this invention — it is the cross section in which a member's sticking and showing lump type epidermis
[Description of Notations]
10 Instrument Panel (Interior Member for Vehicles)
12 Air Bag Equipment
20 Air Bag Door Section
22 This Soma
26 Resin Flow Boundary
30 Punch (Mold Which Becomes Design Side)
32 Female Mold
34 Cavity
40 Slide Core
40A The nose of cam of a slide core
41 Tea Section
42 Epidermis
43 Foaming Layer
46 Base Material
60 This Soma of Instrument Panel
62 Air Bag Door Section of Instrument Panel
64 Instrument Panel
70 This Soma of Instrument Panel
72 Air Bag Door Section of Instrument Panel
74 Instrument Panel

[Translation done.]

* NOTICES *

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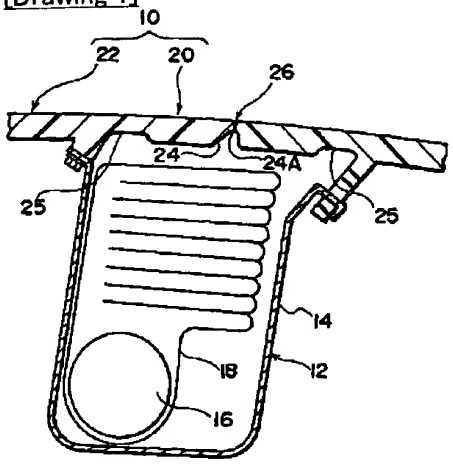
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

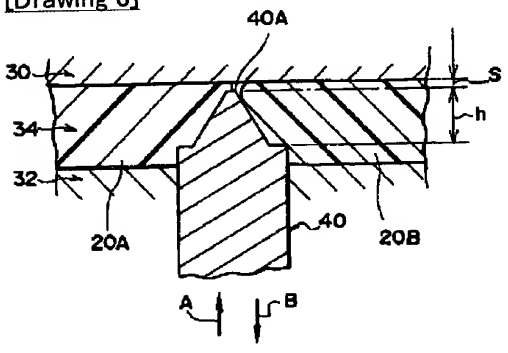
DRAWINGS

[Drawing 1]



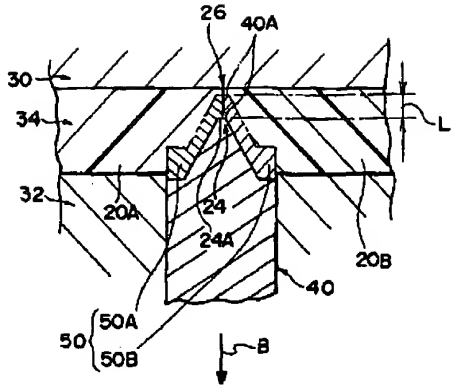
10 インストルメントパネル
12 エアバッグ装置
20 エアバッグドア部
22 本体部
26 樹脂流動境界

[Drawing 3]



30 上型（意匠側となる型）
32 下型
34 キャビティ
40 スライドコア
40A スライドコアの先端

[Drawing 4]



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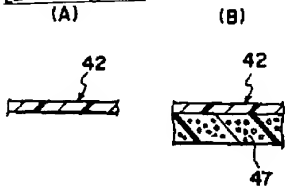
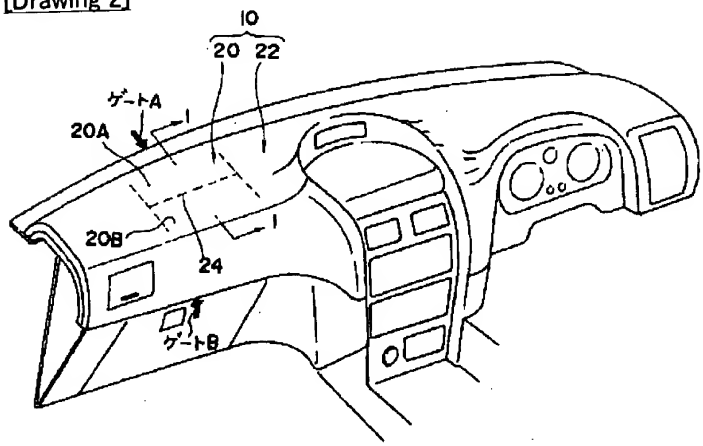


[Drawing 2]



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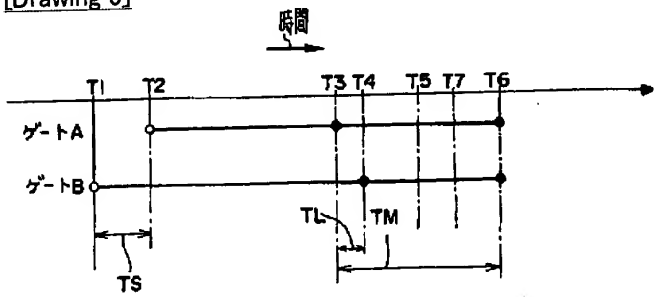

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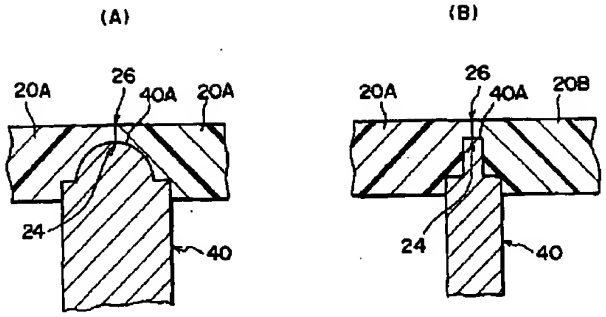
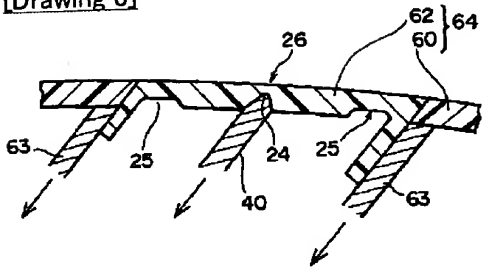
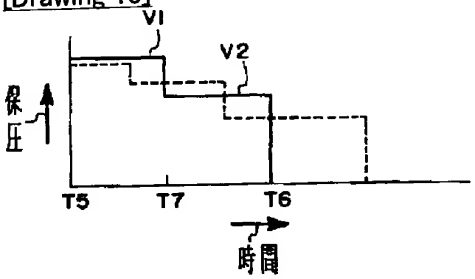


[Drawing 8]

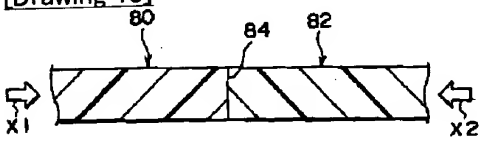


60 インストルメントパネルの本体部
62 インストルメントパネルのエアバッグドア部
64 インストルメントパネル

[Drawing 10]



[Drawing 13]



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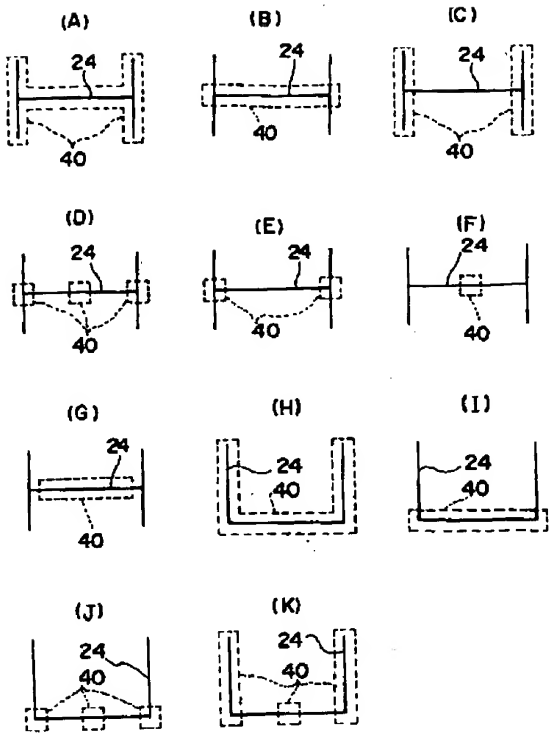

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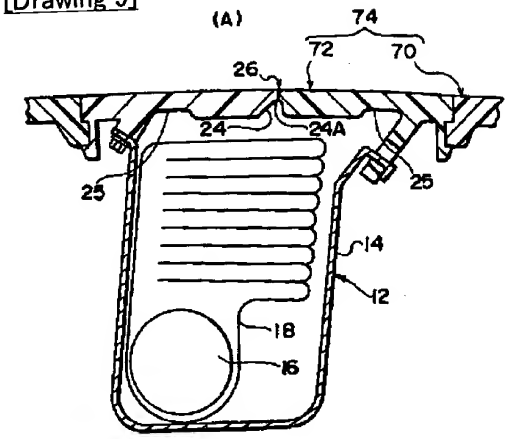
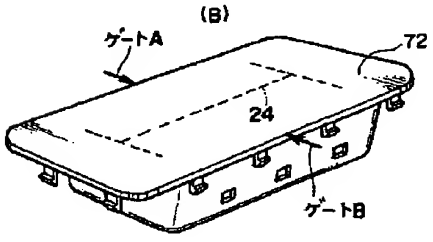
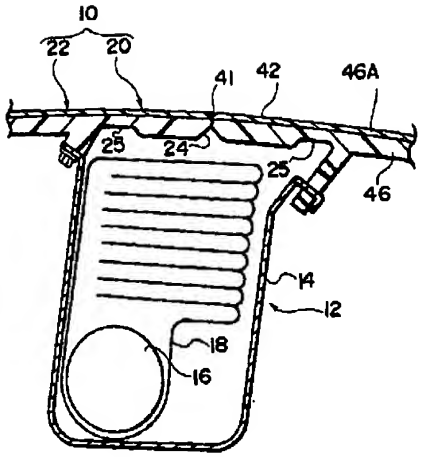


70 インストルメントパネルの本体部
72 インストルメントパネルのエアバッグドア部
74 インストルメントパネル

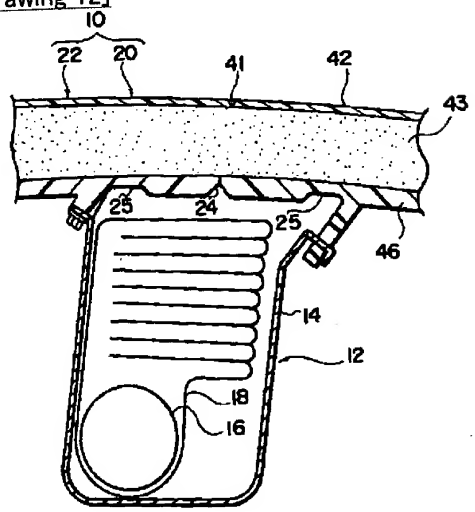


[Drawing 11]



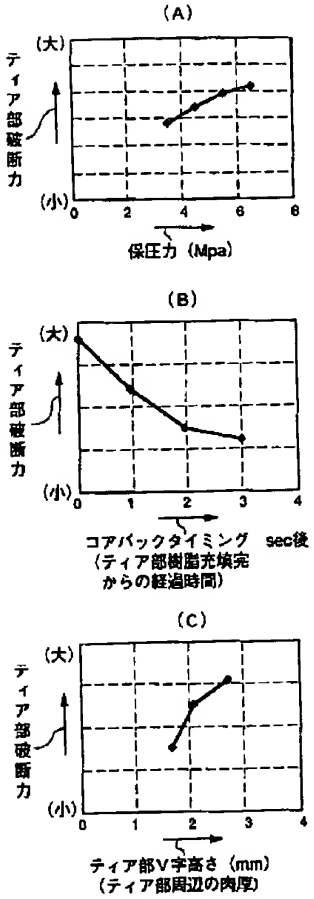
41　ティア部
42　表皮
46　基材

[Drawing 12]

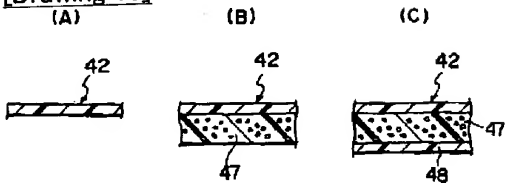


43　発泡層

[Drawing 14]



[Drawing 15]



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Ｂ２９Ｃ　45/16		Ｂ２９Ｃ　45/16	
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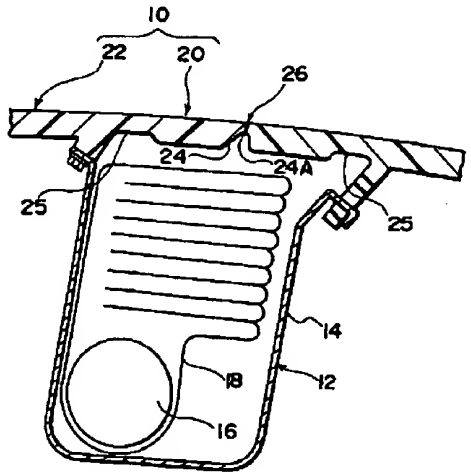
(54)【発明の名称】　エアバッグドア部を有する車両用内装部材及びその成形方法

(57)【要約】

【課題】　車両用内装部材のエアバッグドア部と本体部とを同一樹脂で成形した場合にも、エアバッグドア部の破断部の破断力を所望の値に下げることができる。

【解決手段】　インストルメントパネル１０のエアバッグドア部２０の前後方向略中央部と左右方向両端部には、薄肉部２４が平面視でH形状に形成されている。薄肉部２４の断面はＶ字状となっており、先端２４がエアバッグドア部展開時の破断部になっていると共に、先端２４Ａに、エアバッグドア部２０の前方ドア部２０Ａを構成する樹脂と、後方ドア部２０Ｂを構成する樹脂との樹脂流動境界２６が設定されている。



１０　インストルメントパネル
１２　エアバッグ装置
２０　エアバッグドア部
２２　本体部
２６　樹脂流動境界

1

【特許請求の範囲】

【請求項１】　一体もしくは別体とされた車両用内装部材の本体部とエアバッグドア部とが同一樹脂で射出成形により成形されたエアバッグドア部を有する車両用内装部材において、

エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴とするエアバッグドア部を有する車両用内装部材。

【請求項２】　車両用内装部材の本体部とエアバッグドア部とが異なる樹脂を用いて２色成形にて一体化されたエアバッグドア部を有する車両用内装部材において、

エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴とするエアバッグドア部を有する車両用内装部材。

【請求項３】　一体もしくは別体とされた車両用内装部材の基材の本体部とエアバッグドア部とが同一樹脂を用いて射出成形にて成形され、該基材がティア部付きあるいはティア部なし表皮で覆われたエアバッグドア部を有する車両用内装部材において、

エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴とするエアバッグドア部を有する車両用内装部材。

【請求項４】　一体もしくは別体とされた車両用内装部材の基材の本体部とエアバッグドア部とが同一樹脂を用いて射出成形にて成形され、該基材がティア部付き表皮で覆われ、該表皮と前記基材との間に発泡層が形成されたエアバッグドア部を有する車両用内装部材において、

エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴とするエアバッグドア部を有する車両用内装部材。

【請求項５】　請求項１及至請求項４のいずれかに記載のエアバッグドア部を有する車両用内装部材の成形方法において、

先端が略三角形状とされたスライドコアを固定型に当接または近接させることによりキャビティを破断部にて分断し、この状態で分断された各キャビティに樹脂を射出し、充填完了前後で前記スライドコアを小量後退させることを特徴とするエアバッグドア部を有する車両用内装部材の成形方法。

【請求項６】　前記充填完了前後の保圧、コアバックタイミング及び破断部周辺の肉厚を組み合わせることにより、破断部の破断強度を制御したことを特徴とする請求項５に記載のエアバッグドア部を有する車両用内装部材の成形方法。

【請求項７】　前記コアバックタイミングを前記充填完了後に設定したことを特徴とする請求項６に記載のエアバッグドア部を有する車両用内装部材の成形方法。

【請求項８】　前記充填完了後の保圧を数段階に分けて下げると共に、前記コアバックタイミングを２段目保圧以降に設定したことを特徴とする請求項７に記載のエアバッグドア部を有する車両用内装部材の成形方法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明はエアバッグ装置のドア部をインストルメントパネル等の車両用内装部材に設けたエアバッグドア部を有する車両用内装部材及びその成形方法に関する。

【０００２】

【従来の技術】従来からエアバッグドア部を有するインストルメントパネル等の車両用内装部材が知られており、その一例が特開平８－１９２６６６号公報に示されている。

【０００３】このエアバッグドア部を有するインストルメントパネルの成形方法では、エアバッグドア用の開口部を有するインストルメントパネルの本体部を熱可塑性樹脂で射出成形した後に、エアバッグドア部を熱可塑性エラストマーで射出成形する、所謂２色成形（ダブルインジェクション成形）によって、インストルメントパネルの本体部とエアバッグドア部とが一体成形されている。

【０００４】

【発明が解決しようとする課題】しかしながら、このようなエアバッグドア部を有する車両用内装部材において、エアバッグドア部の樹脂を本体部の樹脂と変えることなく、車両用内装部材全体を同一樹脂で構成した場合には、本体部の樹脂の特性上、エアバッグドア部に形成される展開時の破断部（ティア部）の破断力が高くなり（同一厚みでは）、エアバッグドア部が展開し難くなる。また、これを改善するために、破断部の樹脂厚を薄くし過ぎると、意匠面側から薄肉部がさらに見えるため、外観品質が低下する。

【０００５】また、意匠面側から破断部のラインが全く見えない（インビジブルタイプ）状態にするには、成形時に厚肉にし後加工によってカットする方法がある。しかし、この方法では所定の破断力を維持した上で破断部のラインが見えないようにすることは甚だ困難である。即ち、樹脂厚を小さくすると、レリーフ溝を施したとしても、破断部のラインやうねり感が、意匠面側から見えてしまい、実用上の外観品質を保持できず、樹脂厚を十分に小さくすることができない。

【０００６】なお、エアバッグドア部に形成される展開時の破断部（ティア部）の破断力が高くなり、エアバッグドア部が展開し難くなり、これを改善するために、破断部の樹脂厚を薄くし過ぎると、意匠面側から薄肉部が見えるため、外観品質が低下するという不具合は、エアバッグドア部と車両用内装部材の本体部とを異なる樹脂

を用いて２色成形にて一体成形した車両用内装部材や、エアバッグドア部と車両用内装部材の本体部とを別々に成形した後に係止爪やビス等によって一体とした車両用内装部材の破断部においても発生する。

【０００７】本発明は上記事実を考慮し、車両用内装部材のエアバッグドア部と本体部とを同一樹脂で成形した場合にも、外観品質が低下することなく、且つエアバッグドア部の破断部の破断力を所望の値に下げることができるエアバッグドア部を有する車両用内装部材及びその成形方法を得ることが目的である。

【０００８】

【課題を解決するための手段】請求項１記載の本発明は、一体もしくは別体とされた車両用内装部材の本体部とエアバッグドア部とが同一樹脂で射出成形により成形されたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴としている。

【０００９】従って、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界を設定することによって、樹脂流動境界による強度低下により破断部の破断力を所望の値に下げることができる。また、破断部の樹脂厚を極端に薄くする必要がなくなるため、意匠面側から破断部のラインが全く見えない状態にもでき、外観品質の低下を防止できると共に、耐熱老化性能が向上し且つ、エアバッグドア部全体の支持及び面剛性も向上する。さらに、エアバッグドア部と本体部とを同一樹脂で一体成形した場合には、車両用内装部材の塗装を２種の材質に分けて行う必要がなくなり低コストとなる。

【００１０】請求項２記載の本発明は、車両用内装部材の本体部とエアバッグドア部とが異なる樹脂を用いて２色成形にて一体化されたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴としている。

【００１１】従って、２色成形にて一体化されたエアバッグドア部を有する車両用内装部材においても、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界を設定することによって、樹脂流動境界による強度低下により破断部の破断力を所望の値に下げることができる。また、破断部の樹脂厚を極端に薄くする必要がなくなるため、意匠面側から破断部のラインが全く見えない状態にもでき、外観品質の低下を防止できると共に、耐熱老化性能が向上し且つ、エアバッグドア部全体の支持及び面剛性も向上する。

【００１２】請求項３記載の本発明は、一体もしくは別体とされた車両用内装部材の基材の本体部とエアバッグドア部とが同一樹脂を用いて射出成形にて成形され、該基材がティア部付きあるいはティア部なし表皮で覆われたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴としている。

【００１３】従って、基材がティア部付きあるいはティア部なし表皮で覆われた、所謂、表皮インサート、表皮貼り込みタイプのエアバッグドア部を有する車両用内装部材においても、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界を設定することによって、樹脂流動境界による強度低下により破断部の破断力を所望の値に下げることができる。また、破断部の樹脂厚を極端に薄くする必要がなくなるため、表皮に転写される外観品質の低下を防止できると共に、耐熱老化性能が向上し且つ、エアバッグドア部全体の支持及び面剛性も向上する。

【００１４】請求項４記載の本発明は、一体もしくは別体とされた車両用内装部材の基材の本体部とエアバッグドア部とが同一樹脂を用いて射出成形にて成形され、該基材がティア部付き表皮で覆われ、該表皮と前記基材との間に発泡層が形成されたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないことを特徴としている。

【００１５】従って、基材がティア部付き表皮で覆われ、表皮と基材との間に発泡層が形成された、所謂、一体発泡タイプのエアバッグドア部を有する車両用内装部材においても、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界を設定することによって、樹脂流動境界による強度低下により破断部の破断力を所望の値に下げることができる。また、破断部の樹脂厚を極端に薄くする必要がなくなるため、成形時の欠肉を防止できると共に、耐熱老化性能が向上し且つ、エアバッグドア部全体の支持及び面剛性も向上する。

【００１６】請求項５記載の本発明は、請求項１及至請求項４のいずれかに記載のエアバッグドア部を有する車両用内装部材の成形方法において、先端が略三角形状とされたスライドコアを固定型に当接または近接させることによりキャビティを破断部にて分断し、この状態で分断された各キャビティに樹脂を射出し、充填完了前後で前記スライドコアを小量後退させることを特徴としている。

【００１７】従って、先端が略三角形状とされたスライドコアにより、エアバッグドア部のキャビティを分断し、この状態で樹脂を各キャビティに射出し、樹脂が充填完了する前後の条件でスライドコアを小量後退させるという、簡単な方法でエアバッグドア部展開時の破断部

に樹脂流動境界を設定することができる。この結果、既存の成形設備を使用できるため、低コストに成形できる。また、簡単な方法のため、機能品質の確保においても信頼性が高く、且つ生産性も高い。

【００１８】請求項６記載の本発明は請求項５に記載のエアバッグドア部を有する車両用内装部材の成形方法であって、前記充填完了前後の保圧、コアバックタイミング及び破断部周辺の肉厚を組み合わせることにより、破断部の破断強度を制御したことを特徴としている。

【００１９】従って、請求項５に記載の内容に加えて、破断部の破断強度を充填完了前後の保圧、コアバックタイミング及び破断部周辺の肉厚を組み合わせることにより、所望の値に容易に、且つ精度良く制御できる。

【００２０】請求項７記載の本発明は請求項６に記載のエアバッグドア部を有する車両用内装部材の成形方法であって、前記コアバックタイミングを前記充填完了後に設定したことを特徴としている。

【００２１】従って、充填完了よりもコアバックタイミングが早すぎると、先に充填した樹脂が充填未完了側の空間内に流動し、樹脂流動境界がスライドコアによる破断予定部からずれてしまうが、これに対して、本発明では請求項６に記載の内容に加えて、充填完了後にコアバックタイミングを設定したので、樹脂流動境界と破断予定部との位置ずれを防止できる。

【００２２】請求項８記載の本発明は請求項７に記載のエアバッグドア部を有する車両用内装部材の成形方法であって、前記充填完了後の保圧を数段階に分けて下げると共に、前記コアバックタイミングを２段目保圧以降に設定したことを特徴としている。

【００２３】従って、請求項７に記載の内容に加えて、コアバックタイミングを２段目保圧以降に設定することで、１段目の保圧が確実に行われるため、成形品の重量、寸法及び形状を安定させることができ、製品の不具合発生を低減できる。

【００２４】

【発明の実施の形態】本発明のエアバッグドア部を一体に有する車両用内装部材の一実施形態を図１～図５に従って説明する。

【００２５】図２に示される如く、車両の車室内に設けられている車両用内装部材としてのインストルメントパネル１０には、助手席側（図２の紙面左側）の内方にエアバッグ装置１２（図１に一部を図示）が配設されている。

【００２６】図１に示される如く、エアバッグ装置１２のエアバッグケース１４は、図示を省略したインストルメントパネル・リインフォースメントに固定されており、エアバッグケース１４内には、インフレータ１６及び折り畳んだ状態でエアバッグ袋体１８が収納されている。

【００２７】また、インストルメントパネル１０のエアバッグケース１４と略対向する部位はエアバッグドア部２０となっており、インストルメントパネル１０のエアバッグドア部２０以外の部位は本体部２２となっている。これらのエアバッグドア部２０と本体部２２は、硬質樹脂としてのＴＳＯＰ［エラストマー（ゴム）とＰＰ（ポリプロピレン）をブロイ化（相乗効果が期待できる高分子多成分系材料を造る技術）し、さらにタルクを加えて複合強化したもので、耐衝撃性と剛性を有し、流動性が良く薄肉製品に適した低比重ＰＰ樹脂、例えば、曲げ弾性率１５００～３０００MPa］やＰＰ系樹脂、ＰＣ／ＡＢＳ系樹脂、変性ＰＰＯ系樹脂、ＰＣ／ＰＢＴ系樹脂、ＡＢＳ系樹脂、ＰＣ系樹脂、ＡＳＧ系樹脂、ＴＰＯ系樹脂、ＴＰＥ系樹脂、ＴＰＵ系樹脂、ＰＣ／変性ＰＳ系樹脂等で構成されている。

【００２８】エアバッグ装置１２は、図示しない機械的又は電気的な加速度センサ等によって車両の急減速を検出すると、エアバッグケース１４内のインフレータ１６が作動して、エアバッグケース１４内に折り畳まれて収容されているエアバッグ袋体１８をインストルメントパネル１０のエアバッグドア部２０へ向けて膨張させる。エアバッグ袋体１８は、インストルメントパネル１０のエアバッグドア部２０を押圧してエアバッグドア部２０を開裂させ車室内に展開するようになっている。なお、エアバッグ装置１２としては、従来公知の一般的構成を適用できるため、本実施の形態ではエアバッグ装置１２の詳細な説明は省略する。

【００２９】図２に示される如く、エアバッグドア部２０の前後方向略中央部と左右方向両端部には、薄肉部２４（ティア部）が平面視でH形状に形成されており、エアバッグ袋体展開時にエアバッグドア部２０が前後に観音開きしてエアバッグ袋体が車室内に展開する構成となっている。

【００３０】図１に示される如く、薄肉部２４の断面はＶ字状となっている。具体的には、図３に示すＶ字高さｈがエアバッグドア部の一般厚さを超えない範囲、例えば０＜ｈ≦５ｍｍの範囲に設定される。なお、エアバッグドア部の一般厚さが厚い場合は、さらにｈを大きくしても良い。そして、先端（底部）２４Ａの近傍がエアバッグドア部展開時の破断部になっていると共に、先端２４Ａの近傍に、エアバッグドア部２０の前方ドア部２０Ａを構成する樹脂と、後方ドア部２０Ｂを構成する樹脂との樹脂流動境界２６が設定されている。

【００３１】また、エアバッグドア部２０の前後方向両端部には、薄肉とされたヒンジ部２５が形成されている。従って、エアバッグドア部２０は、エアバッグ展開時、膨張するエアバッグ袋体１８によって押圧されると、薄肉部２４に沿って開裂し、開裂した前方ドア部２０Ａと後方ドア部２０Ｂとが、ヒンジ部２５を中心に回動して、エアバッグ袋体１８を車室内へ展開可能とする開口が形成されるようになっている。

【００３２】次に、本発明の実施形態のインストルメントパネルの成形方法を詳細に説明する。

【００３３】先ず、図３に示される如く、インストルメントパネルの意匠側となる型としての上型３０と、この上型３０と下型３２とのキャビティ３４に、所定の異なるゲートＡもしくはゲートＢ（図２参照）から樹脂を射出して、エアバッグドア部２０の前方ドア部２０Ａを成形し、またゲートＡもしくはゲートＢから樹脂を射出して後方ドア部２０Ｂを成形する。この際、図３に示される如く、断面略三角形状とされたスライドコア４０の先端４０Ａは、上型３０との間に僅かな初期隙間Ｓ（０＜Ｓ≦２ｍｍ）を開けて近接しており、キャビティ３４を実質的に分断している。

【００３４】なお、スライドコア４０は、下型３２内に、上型３０に対して接離する方向（図３の矢印Ａ方向及び矢印Ｂ方向）へ移動可能に配設されている。

【００３５】また、成形条件の一例としての図５に示される如く、ゲートＢの射出開始時間Ｔ１に対して、ゲートＡの射出開始時間Ｔ２を時間ＴＳ（スタートずらし時間）遅らす。このことで、ゲートＡにより射出流動された前方ドア部２０Ａの樹脂が、スライドコア４０の先端４０Ａに到達し、且つ前方ドア部２０Ａを充填する時間Ｔ３と、ゲートＢにより射出流動された後方ドア部２０Ｂの樹脂がスライドコア４０の先端４０Ａに到達し、且つ後方ドア部２０Ｂを充填する時間Ｔ４との間にあるタイムラグＴＬを小さくなる様に調整する。（これは、タイムラグＴＬが大きくなると、表層部での樹脂流動境界２６と薄肉部２４の先端２４Ａとのずれが大きくなり、エアバッグ袋体展開時の開裂のし易さに対してはやや不利になるのを防止するためである。）また、前方ドア部２０Ａの樹脂がスライドコア４０の先端４０Ａに到達した時点Ｔ３から保圧完了時間Ｔ６の間ＴＭ内の所定のポイントＴ７で瞬時に、スライドコア４０を上型３０に近接した位置（図４の二点鎖線の位置）から離間する方向（図４の矢印Ｂ方向）へ所定量Ｌ（エアバッグドア部の一般厚さを超えない範囲、例えば０＜Ｌ≦５ｍｍの範囲に設定される。なお、ドア部の一般厚さが厚い場合にはさらにＬを大きくしても良い）下げた位置（図４の実線の位置）へ移動（コアバック）する。

【００３６】このため、スライドコア４０の移動体積分の空間５０が生じ、保圧完了時間Ｔ６までの間に前方ドア部２０Ａの樹脂で、空間５０の前側空間５０Ａが充填され、且つ、後方ドア部２０Ｂの樹脂で、空間５０の後側空間５０Ｂが充填されて、この部位では、薄肉部２４の先端（底部）２４Ａと樹脂流動境界２６とが一致し、図４の状態になる。なお、図４においては、理解を容易にするために樹脂にて充填される前側空間５０Ａと後側空間５０Ｂとを異なるハッチングで示した。また、図５に示される時間Ｔ５は保圧開始時間を示しており、保圧完了時間Ｔ６後は冷却へ移行する。

【００３７】ここで、保圧と好ましいコアバックタイミングの設定について説明する。保圧は一般に射出完了後、射出圧力の１／２以下位で射出した樹脂にさらに圧力を加えておくことで、成形品の重量、寸法、形状を安定させるために行っている。本実施形態では、図１０に実線で示される如く、保圧をＶ１、Ｖ２の２段階に分けて下げている。１段目の保圧の値Ｖ１は製品全体の良否に大きく影響するので、本実施形態のティア部の樹脂合流（溶着）強度だけのためには、変更し難く自由度が低い。一方、２段目の保圧の値Ｖ２は、１段目の保圧の効果が出ているため、製品全体の良否に大きく影響しないので、変更し易く自由度が高い。従って、スライドコア４０のコアバックタイミングは、製品不良が発生し難い、１段目の保圧時間が経過した以降、即ち、２段目の保圧時に設定することが望ましい。

【００３８】一方、一般的に知られていることで、樹脂の溶着強度に影響を与える要因としては、溶着界面での、樹脂同志の面圧と樹脂温度がある（面圧と樹脂温度が低い方が溶着強度は低下する）。そこで、本発明では保圧によってティア部溶着界面の樹脂同志の面圧を制御し、コアバックタイミング及びティア部周辺板厚によって、ティア部溶着界面の樹脂温度を制御することでティア部の破断力を所望の値に制御するようにした。

【００３９】次に、この点を詳細に説明する。図１３に示される如く、第１の樹脂８０と第２の樹脂８２とは各溶着界面温度が事前に上げられ溶解状態になった後、各々を互いに押し付け方向（矢印Ｘ１、Ｘ２方向）へ所定の力で押圧され互いに接合している。これらの第１の樹脂８０と第２の樹脂８２との溶着界面８４の溶着強度を考えると、一般的に溶着原理上、この溶着強度に影響を与える２つの要因が知られており、それは、溶着界面８４の樹脂同志の面圧と、樹脂温度とである。

【００４０】そこで、本実施形態のティア部溶着の強度を制御するに当たっても同様の考えを応用できる。即ち、流動後、固化し始めかけている状態で、流動樹脂の合流部（溶着部）に対し、溶着界面に伝達される面圧と関係する型内圧力としての保圧と、溶着界面の樹脂温度（溶着界面部の樹脂が溶融状態から時間により冷やされて行く）と関係するコアバックタイミング及びティア周辺肉厚と、に置き換えて制御するようにした。

【００４１】例えば、ゲートからの射出圧１３．５Ｍｐａ、射出時間６ｓｅｃ、保圧６．５Ｍｐａ（１段目）、５．５Ｍｐａ（２段目）、保圧時間２＋７ｓｅｃ、同一製品重量及び同一試験材料を使用した場合、図１４（Ａ）に示される如く、保圧を高くするほど溶着界面に伝達される面圧が高くなり、ティア部破断力が大きくなる。また、図１４（Ｂ）に示される如く、コアバックタイミングを遅くするほど、冷やされて行く時間が長くなり、溶着界面の樹脂温度が低くなるため、ティア部破断力が小さくなる。さらに、図１４（Ｃ）に示される如く、Ｖ字高さを

高くするほど、即ち、ティア部周辺の肉厚を厚くするほど溶着界面の樹脂温度が低くなり難いため、ティア部破断力が大きくなる。

【００４２】従って、これらの、保圧、コアバックタイミング及びティア部周辺の肉厚の各条件を組み合わせることにより、ティア部の破断強度を所望の値に容易に、且つ精度良く制御可能である。

【００４３】また、充填完了よりもコアバックタイミングが早すぎると、充填されている樹脂が充填未完了側の空間内に流動し、樹脂流動境界がスライドコアによる破断予定部からずれてしまうが、これに対して、充填完了後にコアバックタイミングを設定した場合には、樹脂流動境界と破断予定部との位置ずれを防止できる。

【００４４】なお、図５に示される如く、ゲートＡ、Ｂ側の充填後の、保圧開始時間（Ｔ５）と保圧完了時間（Ｔ６）との間の１段目の保圧時間が経過した以降にスライドコア４０のコアバックタイミングＴ７を設定することが好ましく、且つ、樹脂温度が低くなりすぎない、１段目の保圧時間経過直後をコアバックタイミングとすることが最も好ましい。

【００４５】また、図１０に破線で示される如く、保圧を３段階またはそれ以上の複数階に分けて下げると共に、コアバックタイミングを２段目保圧以降に設定しも良い。この場合には、コアバックタイミングを２段目保圧以降に設定することで、１段目の保圧が確実に行われるため、成形品の重量、寸法及び形状を安定させることができ、製品の不具合発生を低減できる。

【００４６】以上の工程によって、図４に示される如く、スライドコア４０の先端４０Ａによって、断面Ｖ字状の薄肉部２４が形成されると共に、スライドコア４０の移動量Ｌが少量のため薄肉部２４の先端２４Ａに樹脂流動境界２６が設定される。

【００４７】従って、本実施形態のインストルメントパネル１０では、エアバッグドア部展開時の破断部としての薄肉部２４を形成するためのスライドコア４０のコアバック領域、即ち、薄肉部２４の先端２４Ａの近傍に樹脂流動境界２６を設定することによって、樹脂流動境界２６による強度低下と板厚制御により、破断部の破断力を所望の値に下げることができる。このため、破断部の樹脂厚（初期隙間Ｓ＋スライドコアストローク量Ｌ）を極端に薄くする必要がなくなるため、外観品質の低下を防止できると共に、意匠面側から破断部のラインが全く見えない状態にもでき、耐熱老化性能の向上、エアバッグドア部全体の支持及び面剛性も向上する。さらに、インストルメントパネル１０のエアバッグドア部２０と本体部２２とを同一樹脂で成形できるため、塗装を材質毎（２種）に分けて行う必要がなくなり低コストとなる。

【００４８】また、本実施形態のインストルメントパネルの成形方法では、先端が略三角形状とされたスライドコア４０によりエアバッグドア部のキャビティ３４を破断部にて分断し、この状態で樹脂を分断された各キャビティに射出し、樹脂が充填完了する前後の条件でスライドコア４０を小量Ｌ後退させるという、簡単な方法でエアバッグドア部展開時の破断部としての薄肉部２４を形成するためのスライドコア４０のコアバック領域に樹脂流動境界２６を設定することができる。この結果、既存の成形設備を使用できるため、低コストに成形できる。また、簡単な方法のため機能品質の確保においても信頼性が高く、且つ生産性も高い。

【００４９】以上に於いては、本発明を特定の実施形態について詳細に説明したが、本発明はかかる実施形態に限定されるものではなく、本発明の範囲内にて他の種々の実施形態が可能であることは当業者にとって明らかである。例えば、本実施形態では、スライドコア４０の先端４０Ａと上型３０との間に初期隙間Ｓ（０＜Ｓ≦２ｍｍ）を開けて、スライドコア４０の先端４０Ａと上型３０との干渉を無くして、型の表面のシボ傷防止や耐久性保証を考慮したが、タイムラグＴＬが大きい場合には、初期隙間Ｓを０．１≦Ｓ≦０．８ｍｍとして、表層部での樹脂流動境界２６と薄肉部２４の先端２４Ａとのずれを大きくさせても良い。この場合、エアバッグ袋体展開時の開裂のし易さに対してやや不利となるが、先端２４Ａにおける意匠面側からの破断部ラインの外観品質は同一厚みでは向上できる。また、場合によっては初期隙間Ｓ＝０としてスライドコア４０の先端４０Ａを、上型３０に当接させてもよい。

【００５０】また、本実施形態では、ゲートＢの射出開始時間Ｔ１に対して、ゲートＡの射出開始時間Ｔ２を時間ＴＳ（スタートずらし時間）遅らせたが、これに代えて、ゲートＡとゲートＢとの位置関係により、ゲートＡから先に射出させ、ゲートＢからの射出を時間ＴＳだけ遅らせて、充填間隙時間（タイムラグ）ＴＬを小さくしても良い。また、ゲートＡの射出開始時間Ｔ２とゲートＢの射出開始時間Ｔ１とを同時にすることで、ゲートＡから射出された前方ドア部２０Ａの樹脂がスライドコア４０の先端４０Ａに到達する時間Ｔ３と、ゲートＢから射出された後方ドア部２０Ｂの樹脂がスライドコア４０の先端４０Ａに到達する時間Ｔ４とが同じ位になるのであればそれでも良い。

【００５１】また、スライドコア４０を設ける範囲としては、展開性能を満足し、且つ型構造の許す範囲で、図６（Ａ）に示される如く、Ｈ形状の薄肉部２４の全部でも良いが、図６（Ｂ）に示される如く、スライドコア４０の範囲をＨ形状の薄肉部２４の横ラインに沿った範囲だけにしても良い。また、図６（Ｃ）に示される如く、スライドコア４０の範囲をＨ形状の薄肉部２４の縦ラインに沿った範囲だけにしても良い。また、図６（Ｄ）～図６（Ｇ）に示される如く、スライドコア４０の範囲をＨ形状の薄肉部２４の極一部の範囲だけとしても良い。

【００５２】また、薄肉部２４の断面形状は、Ｖ字形状

の他に図７（Ａ）に示すＲ形状や図７（Ｂ）に示す段付形状等にしても良い。

【００５３】また、スライドコア４０のコアバックのタイミングは、図５の時間Ｔ３から時間Ｔ６までの間のどこか一瞬であるばかりでなく、樹脂が流動可能であるなら時間Ｔ６後の冷却時間中に実施しても良い。また、スライドコア４０のコアバックのスピードは瞬時でも、時間Ｔ３から時間Ｔ６まで費やす様なゆっくりとしたスピードでも良い。また、前方ドア部２０Ａの樹脂はゲートＡのみからだけでなく、ゲートＢからも回り込んで充填されるため、ゲートを１本としても良い。

【００５４】また、本発明のエアバッグドア部を有するインストルメントパネル及びその成形方法は、図２に示される様な薄肉部２４が平面視でＨ形状に形成された観音開きタイプのエアバッグドア部に限定されず、薄肉部２４が平面視でコ字形状、Ｘ形状等の他の形状のエアバッグドア部を有するインストルメントパネル及びその成形方法にも適用可能である。

【００５５】なお、薄肉部２４が平面視でコ字形状の場合のスライドコア４０を設ける範囲としては、展開性能を満足し、且つ型構造の許す範囲で、図６（Ｈ）に示される如く、コ字形状の薄肉部２４の全部でも良いが、図６（Ｉ）に示される如く、スライドコア４０の範囲をコ字形状の薄肉部２４の横ラインに沿った範囲だけにしても良い。また、図６（Ｊ）及び図６（Ｋ）に示される如く、スライドコア４０の範囲をコ字形状の薄肉部２４の極一部の範囲だけとしても良い。

【００５６】また、本発明のエアバッグドア部を有するインストルメントパネル及びその成形方法は、図８に示される如く、インストルメントパネルの本体部６０とエアバッグドア部６２とが異なる樹脂を用いて、スライドコア６３による２色成形にて一体化されたエアバッグドア部を有するインストルメントパネル６４にも適用可能である。

【００５７】また、本発明のエアバッグドア部を有するインストルメントパネル及びその成形方法は、図９（Ａ）及び図９（Ｂ）に示される如く、別体とされたインストルメントパネルの本体部７０とエアバッグドア部７２とを樹脂を用いて射出成形した後に係合爪やビス等により一体としたエアバッグドア部を有するインストルメントパネル７４にも適用可能である。

【００５８】また、本発明のエアバッグドア部を有する車両用内装部材及びその成形方法は、図１１に示される如く、基材４６と、基材４６の意匠面４６Ａを覆う表皮４２とを備えた、所謂、表皮インサート、表皮貼り込みタイプの車両用内装部材としてのインストルメントパネル１０にも適用可能であり、この場合、表皮４２にはティア部４１が溝２４に沿って形成されており、エアバッグ袋体展開時に表皮４２が容易に破断するように設定されている。または、ティア部４１が無くても、エアバッグドア部は剛性大の材料のため、展開と同時に局所的な引っ張りが生じるので、表皮４２は破断し易い。また、ここで示す表皮４２は、表皮インサートの場合、図１５（Ａ）に示される単層の表皮４２以外に、図１５（Ｂ）に示される２層の表皮４２、図１５（Ｃ）に示される３層の表皮４２を使用しても良い。なお、図１５（Ａ）～図１５（Ｃ）において、符号４７はフォーム層であり、符号４８はバリア層を示す。

【００５９】また、貼り込みタイプの場合、図１６（Ａ）に示される単層の表皮４２以外に、図１６（Ｂ）に示されるフォーム層４７付きの表皮４２を使用しても良い。

【００６０】また、本発明のエアバッグドア部を有する車両用内装部材及びその成形方法は、図１２に示される如く、基材４６、表皮４２及び基材４６と表皮４２との間の発泡層４３を備えた、所謂、一体発泡タイプの車両用内装部材としてのインストルメントパネル１０にも適用可能である。

【００６１】また、図１１及び図１２に示した表皮４２に形成されるティア部４１は、表面側から形成されるものだけでなく、裏面側から形成されたものでも良い。また、ティア部４１の形状は、断面Ｕ溝状に限定されず、断面Ｖ溝状、スリット状等の他の形状であっても良い。

【００６２】

【発明の効果】請求項１記載の本発明は、一体もしくは別体とされた車両用内装部材の本体部とエアバッグドア部とが同一樹脂で射出成形により成形されたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないため、車両用内装部材のエアバッグドア部と本体部とを同一樹脂で成形した場合にも、外観品質が低下することなく、且つエアバッグドア部の破断部の破断力を所望の値に下げることができるという優れた効果を有する。さらに、エアバッグドア部と本体部とを同一樹脂で一体成形した場合には、車両用内装部材の塗装を２種の材質に分けて行う必要がなくなり低コストとなるという優れた効果を有する。

【００６３】請求項２記載の本発明は、車両用内装部材の本体部とエアバッグドア部とが異なる樹脂を用いて２色成形にて一体化されたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないため、２色成形にて一体化されたエアバッグドア部を有する車両用内装部材においても、外観品質が低下することなく、且つエアバッグドア部の破断部の破断力を所望の値に下げることができるという優れた効果を有する。

【００６４】請求項３記載の本発明は、一体もしくは別体とされた車両用内装部材の基材の本体部とエアバッグ

ドア部とが同一樹脂を用いて射出成形にて成形され、基材がティア部付きあるいはティア部なし表皮で覆われたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないため、表皮インサート、表皮貼り込みタイプのエアバッグドア部を有する車両用内装部材において、車両用内装部材の基材のエアバッグドア部と本体部とを同一樹脂で成形した場合にも、外観品質が低下することなく、且つエアバッグドア部の破断部の破断力を所望の値に下げることができるという優れた効果を有する。

【００６５】請求項４記載の本発明は、一体もしくは別体とされた車両用内装部材の基材の本体部とエアバッグドア部とが同一樹脂を用いて射出成形にて成形され、該基材がティア部付き表皮で覆われ、該表皮と前記基材との間に発泡層が形成されたエアバッグドア部を有する車両用内装部材において、エアバッグドア部展開時の破断部を形成するためのコアバック領域に樹脂流動境界が設定されており、意匠面側から破断部のラインが見えないため、一体発泡タイプのエアバッグドア部を有する車両用内装部材において、車両用内装部材の基材のエアバッグドア部と本体部とを同一樹脂で成形した場合にも、外観品質が低下することなく、且つエアバッグドア部の破断部の破断力を所望の値に下げることができるという優れた効果を有する。

【００６６】請求項５記載の本発明は、請求項１及至請求項４のいずれかに記載のエアバッグドア部を有する車両用内装部材の成形方法において、先端が略三角形状とされたスライドコアを固定型に当接または近接させることによりキャビティを破断部にて分断し、この状態で分断された各キャビティに樹脂を射出し、充填完了前後でスライドコアを小量後退させるため、簡単な方法でエアバッグドア部展開時の破断部に樹脂流動境界を設定することができ、低コストで且つ機能保証及び生産性も高いという優れた効果を有する。

【００６７】請求項６記載の本発明は請求項５に記載のエアバッグドア部を有する車両用内装部材の成形方法であって、充填完了前後の保圧、コアバックタイミング及び破断部周辺の肉厚を組み合わせることにより、破断部の破断強度を制御したため、請求項５に記載の効果に加えて、破断部の破断強度を所望の値に容易に、且つ精度良く制御できるという優れた効果を有する。

【００６８】請求項７記載の本発明は請求項６に記載のエアバッグドア部を有する車両用内装部材の成形方法であって、コアバックタイミングを充填完了後に設定したため請求項６に記載の効果に加えて、樹脂流動境界と破断予定部との位置ずれを防止できるという優れた効果を有する。

【００６９】請求項８記載の本発明は請求項７に記載のエアバッグドア部を有する車両用内装部材の成形方法であって、前記充填完了後の保圧を数段階に分けて下げると共に、前記コアバックタイミングを２段目保圧以降に設定したため、請求項７に記載の効果に加えて、成形品の重量、寸法及び形状を安定させることができ、製品の不具合発生を低減できるという優れた効果を有する。

【図面の簡単な説明】

【図１】図２の１－１線に沿った拡大断面図である。

【図２】本発明の一実施形態に係るエアバッグドア部を一体に有する車両用内装部材を示す斜視図である。

【図３】本発明の一実施形態に係るエアバッグドア部を一体に有する車両用内装部材の成形方法における一工程を示す概略断面図である。

【図４】本発明の一実施形態に係るエアバッグドア部を一体に有する車両用内装部材の成形方法における一工程を示す概略断面図である。

【図５】本発明の一実施形態に係るエアバッグドア部を一体に有する車両用内装部材の成形方法を示すタイミングチャートである。

【図６】（Ａ）～（Ｇ）は本発明の一実施形態に係るエアバッグドア部を一体に有する車両用内装部材のＨ形状の薄肉部に対するスライドコアの範囲を示す概略平面図であり、（Ｈ）～（Ｋ）は本発明の応用例に係るエアバッグドア部を一体に有する車両用内装部材のコ字形状の薄肉部に対するスライドコアの範囲を示す概略平面図である。

【図７】（Ａ）、（Ｂ）は本発明の一実施形態の応用例に係るエアバッグドア部を一体に有する車両用内装部材の薄肉部の断面形状を示す概略断面図である。

【図８】本発明の一実施形態の応用例に係るエアバッグドア部を一体に有する車両用内装部材の成形工程における一工程を示す概略断面図である。

【図９】（Ａ）は本発明の一実施形態の応用例に係るエアバッグドア部を一体に有する車両用内装部材のエアバッグドア部を示す側断面図であり、（Ｂ）は本発明の一実施形態の応用例に係るエアバッグドア部を一体に有する車両用内装部材のエアバッグドア部を示す斜視図である。

【図１０】本発明の一実施形態に係るエアバッグドア部を一体に有する車両用内装部材の成形時の保圧の変化を示すグラフである。

【図１１】本発明の一実施形態の応用例に係るエアバッグドア部を一体に有する車両用内装部材を示す図１に対応する断面図である。

【図１２】本発明の一実施形態の他の応用例に係るエアバッグドア部を一体に有する車両用内装部材を示す図１に対応する断面図である。

【図１３】第１の樹脂と第２の樹脂との溶着強度に影響を与える２つの要因を説明する断面図である。

【図１４】（Ａ）は保圧とティア部破断力との関係を示

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すグラフであり、（B）はコアバックタイミングとティア部破断力との関係を示すグラフであり、（C）はティア部周辺の肉厚とティア部破断力との関係を示すグラフである。

【図１５】（A）～（C）は本発明に係るエアバッグドア部を有する車両用内装部材の表皮インサートの表皮を示す断面図である。

【図１６】（A）及び（B）は本発明に係るエアバッグドア部を有する車両用内装部材の貼り込みタイプの表皮を示す断面図である。

【符号の説明】

１０　インストルメントパネル（車両用内装部材）
１２　エアバッグ装置
２０　エアバッグドア部
２２　本体部
２６　樹脂流動境界

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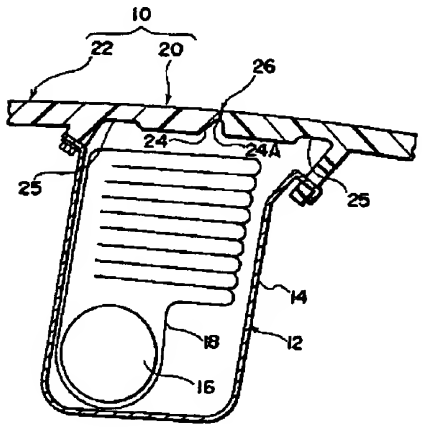
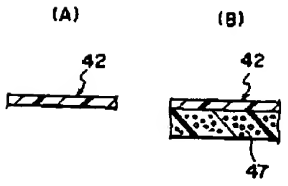
３０　上型（意匠側となる型）
３２　下型
３４　キャビティ
４０　スライドコア
４０Ａ　スライドコアの先端
４１　ティア部
４２　表皮
４３　発泡層
４６　基材
６０　インストルメントパネルの本体部
６２　インストルメントパネルのエアバッグドア部
６４　インストルメントパネル
７０　インストルメントパネルの本体部
７２　インストルメントパネルのエアバッグドア部
７４　インストルメントパネル

【図１】

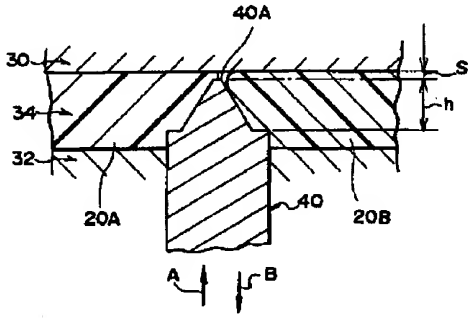


１０　インストルメントパネル
１２　エアバッグ装置
２０　エアバッグドア部
２２　本体部
２６　樹脂流動境界

【図１６】

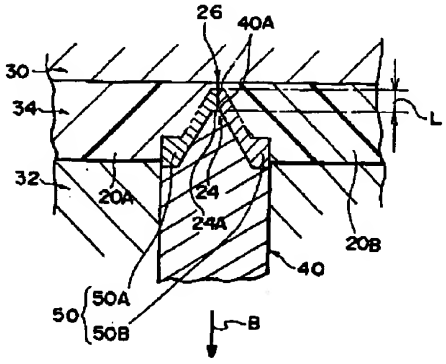


【図３】

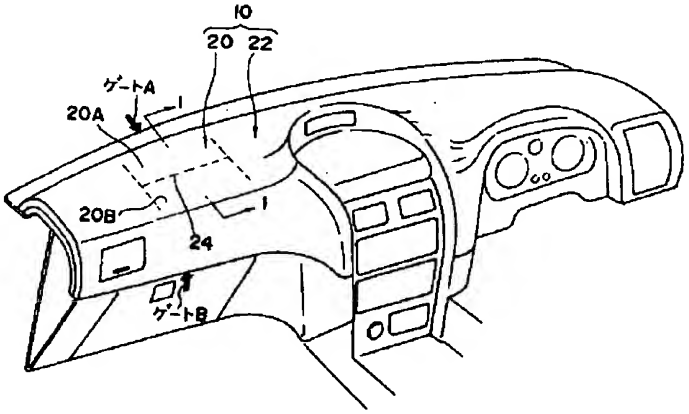


３０　上型（意匠側となる型）
３２　下型
３４　キャビティ
４０　スライドコア
４０Ａ　スライドコアの先端

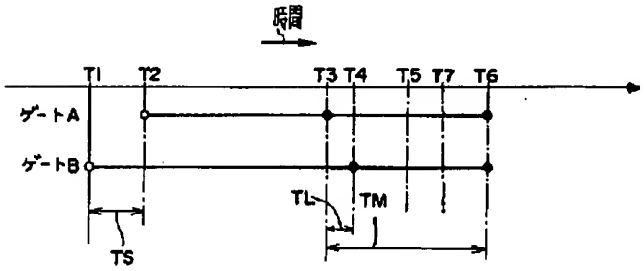
【図４】



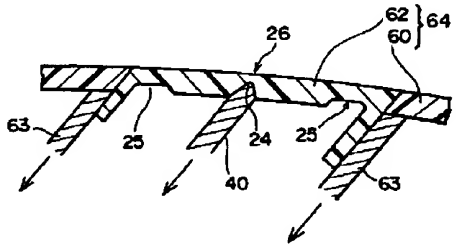
【図２】



【図５】

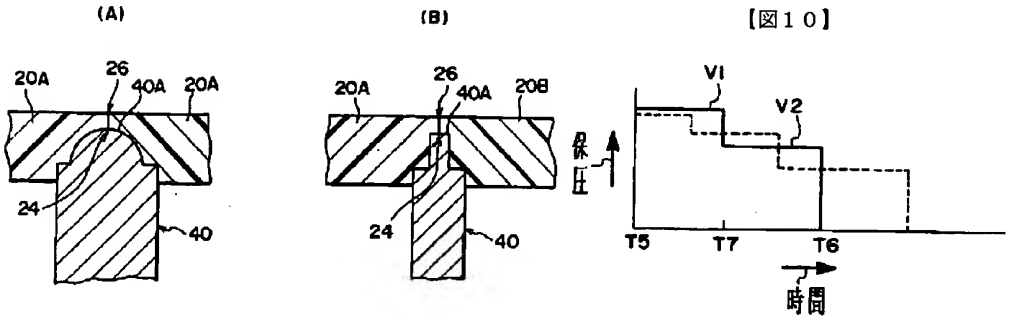


【図８】



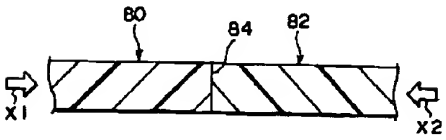
60　インストルメントパネルの本体部
62　インストルメントパネルのエアバッグドア部
64　インストルメントパネル

【図７】

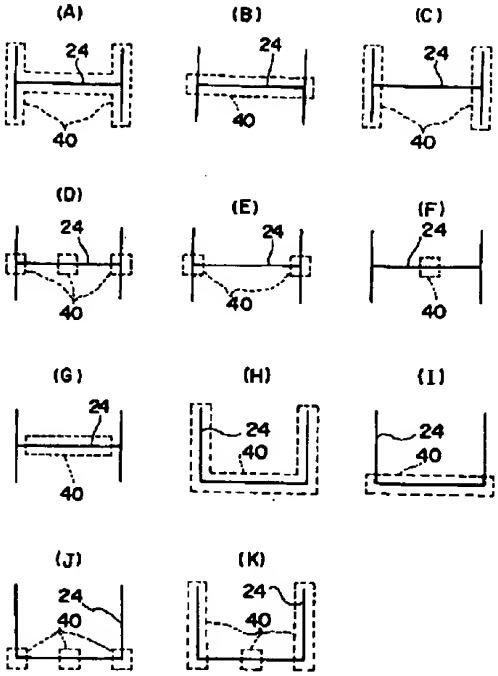


【図１０】

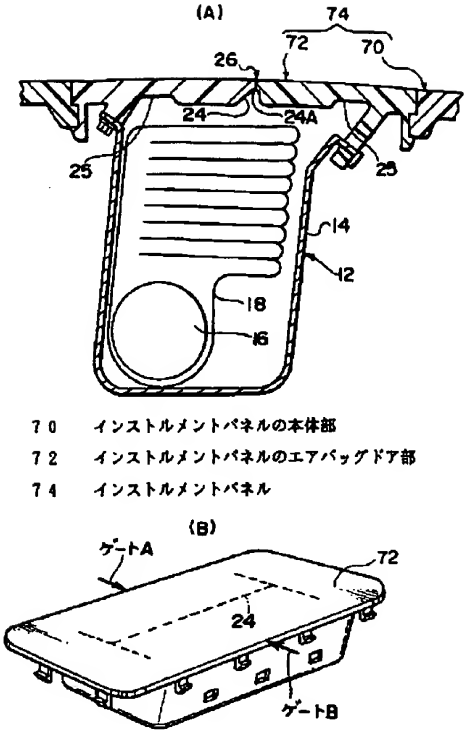
【図１３】



【図６】

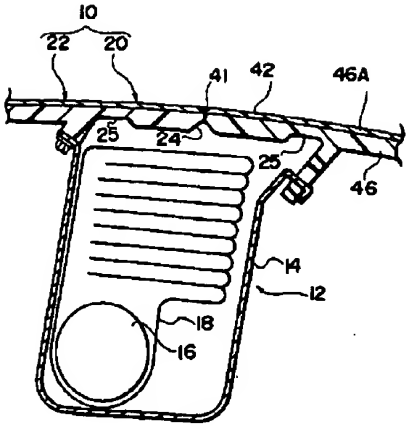


【図９】



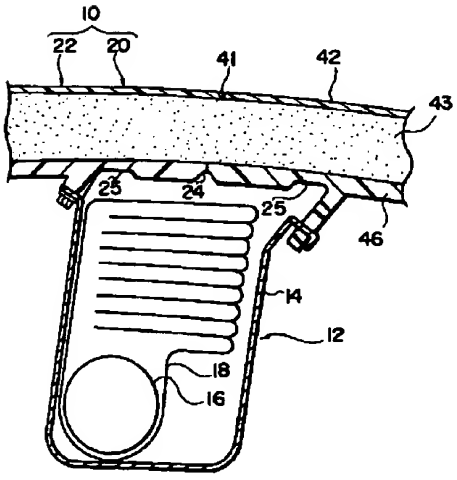
７０　インストルメントパネルの本体部
７２　インストルメントパネルのエアバッグドア部
７４　インストルメントパネル

【図１１】



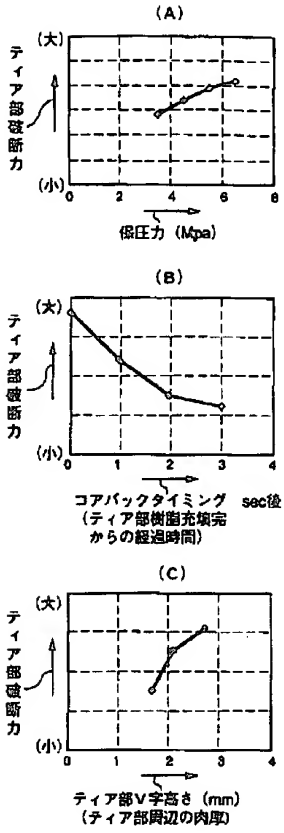
４１　ティア部
４２　表皮
４６　基材

【図１２】

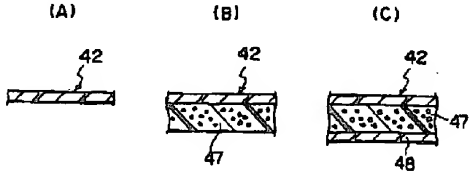


４３　発泡層

【図１４】


(A)
(大)
ティア部破断力
(小)
0
2
4
6
8
保圧力（Mpa）
(B)
(大)
ティア部破断力
(小)
0
1
2
3
4
コアバックタイミング　sec後
（ティア部樹脂充填完
からの経過時間）
(C)
(大)
ティア部破断力
(小)
0
1
2
3
4
ティア部Ｖ字高さ（mm）
（ティア部周辺の肉厚）

【図１５】


(A)
(B)
(C)
42
42
42
47
47
48